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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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08/987,380

12/09/1997

MASAO INOUE

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6198

7590 10/28/2009
SUGHRUE MION ZINN MACPEAK & SEAS
2100 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 200373202

EXAMINER

WANG, SHENGJUN

ART UNIT	PAPER NUMBER
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1627

MAIL DATE	DELIVERY MODE
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10/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 08/987,380	Applicant(s) INOUE ET AL.	
	Examiner Shengjun Wang	Art Unit 1627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7,10,11,13 and 16-21 is/are pending in the application.
- 4a) Of the above claim(s) 16-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7,10,11,13,19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 19, 2009 has been entered.

Claims Rejections 35 U.S.C. - 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5 -7, 10, 11, 13 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tocker (WO 91/10362 of record) in view of Burger et al. (WO 93/04017, CA 2115998 is an English equivalent) and Kogler et al. (US Patent 4,772,490, of record).

4. Tocker teaches a pesticidal granule composition coated with polyurethane. See, particularly, page 2, line 23-31. The polyols employed has at least two hydroxyl groups and the polyisocyanate has at least one isocyanate substituent (-NCO). See, particularly. Page 4, lines 1-30. The amount of polyisocyanate employed is about 1-20% by weight, and the reaction temperature is at ambient temperature or above. The coating procedure can be carried out stepwise. See, particularly, page 5, line 5-22. Tocker further teaches that, as required by some practice, e.g., slow release of the active component, monomers containing more isocyanate or

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hydroxyl group may be employed to increase the degree of cross-link in polyurethane. See, particularly, page 10, lines 16-24. The polyisocyanate employed therein are, for example, *triisocyanate toluene*, 1, 5-naphthalene diisocyanate, etc. the polyols employed therein are, for example, glycerin, glycol or other polyhydric alcohols. See, particularly, page 4, lines 3-30.

Tocker does not teach expressly the employment of the particular procedure herein for making the coating wherein the polyols and polyisocyanate are mixed before the application to the granules.

5. However, Burger et al. teach that the particular procedure herein, i.e., mixing the polyol and polyisocyanate before applying them to the granules, is known for coating agrochemical granules for forming multiple layers of polyurethane coating. The coating made by such procedure are known to be with sufficient homogeneity of the individual particle coating, and be physically stable, resistant to frost and provide sustained release of active ingredients. See, particularly, the abstract, page 1, the examples and the claims. Kogler et al. also teaches method of coating granular agrochemicals with polyurethane for controlled release of active ingredients, wherein polyisocyanate and polyols are premixed. See, particularly, the abstract, examples 2-5 in columns 5 and 6. The coating's properties may be manipulated by using different polyols and different isocyanates. See, particularly, column 2, line 49 bridging column 3, line 29.

Therefore, it would have been *prima facie* obvious to a person of ordinary skill in the art, at the time the claimed the invention was made, to modify the pesticidal granules of Tocker by mixing the polyols and polyisocyanates first followed by coating the mixture to the granules.

A person of ordinary skill in the art would have been motivated to make such modification because the modification will lead to a stable, controlled releasing coating. Claim

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19, which particularly recites the employment of polyisocyanate having tri-isocyanate groups and polyol having tri hydroxyl group, would have been obvious because the prior art teach the employment of a variety of polyisocyanate and polyol, including those with tri isocyanate groups and tri hydroxyl groups. Further, the amount of those multiple functional monomers are known to be a parameter that affects the properties of polyurethane. As it is well-settled that optimization of result affecting parameters would be within the skill of artisan.

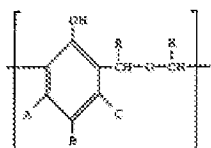
6. Regarding claims 5, 7, 10,11, 13, 20 which recited water absorption ratio of the polyurethane is not more than 5%, glass transition temperature greater than 57. It is noted that the reference and the instant application are employing the essentially the same polyols and polyisocyanates. See, pages 13-14 in the specification and page 4 in Tocker. Therefore, the polyurethane coating of Tocker is reasonably expected to have the same water absorption ratio as claimed herein. Further, the optimization the properties of the coating accordingly by using different isocyanate or polyol is considered within the skill of artisan, as discussed by Tocker et al. (cross link degree) and Kolger et al. (different polyol and isocyanate). Claim 20 recites limitation of Tg of the resin to be 57oC or greater. Claim 21 recite OH equivalent of the resin to be 196 or less. Note the "OH equivalent" means polyol equivalent (paragraph [0224] of the publication of this application, US 2002/0054897), referring to the molecular weight/number of hydroxyl groups in the molecules. Optimization of the molecular weight of polyol so that to achieve a optimal releasing profile would have been obvious to one of ordinary skill in the art, particularly, in view of the guidance provided by Tocker and Kogler et al. Tocker teaches that, as required by some practice, e.g., slow release of the active component, monomers containing

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more isocyanate or hydroxyl group may be employed to increase the degree of cross-link in polyurethane. See, particularly, page 10, lines 16-24. Kogler et al. particularly teach that:

The rate at which the active ingredient is being released from the granular substance covered according to the method of the invention can be adjusted by varying the polyol and isocyanate components and the thickness of the covering and its polyurethane content, with the result that in the case of fertilizer granules for instance, an effective period of from 1 month to 1 year can be achieved. Col. 2, line 34-41.

The disclosed polyol with repeating unit of :



meets the limitation of OH equivalent. Assuming A, B, C, and R are

hydrogen, the OH equivalent will be 136. Further, since the repeating group only has one oxygen as hydrophilic moiety, a polyurethane derived from such polyol would have reasonably expected to have lower water absorption and higher Tg.

Response to the Arguments

7. Applicants' amendments and remarks submitted August 19, 2009 have been fully considered, but are not persuasive.

With respect to the rejections of claims 5, 10, 11 and 13, the examiner maintains his position as discussed in the prior office action. Particularly, as the Board noted, the water absorption ratio is merely an inherent properties resulted from the employed polyisocyanate and polyol. (pages 7-8 of the Decision on Appeal issued 12/03/2007). The cited references provide clear guidance to adjust the kind and amount of polyol to achieve the desired releasing profile. As to the rejections of claim 20, it is noted that the Tg, similar to the water absorption ratio, is just a inherent properties resulted from the employed polyisocyanate and polyol. See, table 2 in

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the application. and page 7 of the Decision on Appeal. The limitation recited in claim 21, i.e., the OH equivalent value, do not distinguish the claimed invention from the prior art. As discussed above, the cited references provide clear guidance to adjust the kind and amount of polyol. In fact, the polyol disclosed by Kogler et al. would meet the limitation herein.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shengjun Wang whose telephone number is (571) 272-0632. The examiner can normally be reached on Monday to Friday from 7:00 am to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan, can be reached on (571) 272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Shengjun Wang/
Primary Examiner, Art Unit 1627